

REMARKS

Reconsideration of this application, as amended, is requested.

Claims 1-5 remain in the application. Independent claim 1 has been amended to define more clearly that the method detects a plurality of signals and utilizes the signals from a plurality of different sources for controlling rotating torque transmission from a drive side to a driven side. Independent claim 3 has been amended to correct a typographical mistake. New claim 5 has been added and further defines the method of claim 3.

The claims existing prior to this amendment were rejected under 35 USC 103(a) as being obvious over the newly cited Martin et al. reference (US4,556,138) in view of the assignee's earlier Shiozaki et al. (US6,550,596). The Examiner concluded that the newly cited Martin et al. reference relates to a fan clutch with a housing that has a partition plate dividing the interior of the housing into an oil reservoir chamber and torque transmission chamber. A passage is formed through the partition plate and a valve member is biased into a position for closing the passage. However, an eletromagnet 20 is positioned near the valve member of Martin et al. and can be actuated for selectively opening the valve member of Martin et al. so that fluid will flow from the oil reservoir chamber into the torque transmission chamber. The fairly simple Martin et al. system actuates the magnet in response to the temperature of the coolant for the engine. The Examiner acknowledged that the fairly simple logic employed in the Martin et al. device did not teach or suggest the complex control parameters recited in the previously presented claims. Accordingly, the Examiner turned to assignee's earlier

Shiozaki et al. reference in an effort to overcome the deficiencies of the newly cited Martin et al. reference.

In contrast to Martin et al. the assignee's earlier Shiozaki et al. reference utilizes a very complex electromagnetic control logic. As noted earlier in this prosecution, the Shiozaki et al. reference has a valve with a magnetic piece 9.2 and a plate spring 9.1. The plate spring 9.1 is biased into a position for closing the oil supply adjusting hole 7. However, a permanent magnet 10 is disposed on the side of the case 2-1 opposite the oil supply adjusting hole 7. As a result, the permanent magnet 10 constantly exerts a magnetic force on the magnetic piece 9-1 of the valve member 9 to urge the valve member 9 away from the partition plate 4 and away from the oil supply adjusting hole 7 in the partition plate 4. Hence, the permanent magnet 10 constantly exerts forces for keeping the oil supply adjusting hole 7 in the open state, thereby permitting more oil to flow into the torque transmission chamber for generating more torque on the driving disc and generating higher rotational speeds of the case 2. Higher rotational speeds are not always required. Hence, operational conditions exist where the oil supply adjusting hole 7 should be closed to stop a flow of oil into the torque transmission chamber and to permit the oil in the torque transmission chamber to flow gradually out due to the action of the dam 15. To achieve this closing of the oil supply adjusting hole 7, the electromagnet 11 is operated to generate a magnetic field in a direction opposite to the magnetic field generated by the permanent magnet 10. Thus, the magnetic field of the electromagnet 11 overcomes the magnetic forces of the permanent magnet 10 so that the biasing forces of the plate spring 9.1 urge the valve member 9 into a position for closing the oil supply adjusting hole 7.

The magnetic field generated by the electromagnet of Shiozaki et al. has three patterns as described below:

- (a) Cutting the magnetic field; OFF:
i.e., a magnetic field of a permanent magnet attracts a valve member made by a leaf spring which has a magnetic piece, whereby an oil supply adjustment hole is opened;
- (b) Reinforcing a magnetic field of a permanent magnet; ON -1:
i.e., the magnetic field of the permanent magnet is reinforced to attract the valve member made by the leaf spring, whereby the oil supply adjustment hole is opened,
- (c) Canceling the magnetic field of the permanent magnet; ON -2:
i.e., the magnetic field of the permanent magnet is cancelled to attract the valve member made by the leaf spring, whereby the oil supply adjustment hole is opened.

Comparing the above-described pattern (b); ON -1 with pattern (c); ON -2, it is necessary to apply a reverse electric current to an electromagnet, since the direction of magnetic flux of the magnetic field is opposite. More particularly, for performing the above controls of the three patterns (a)-(c), it is necessary to pass an electric current with a current of regular voltage varyingly combined with a current of reverse voltage. Therefore, the control logic becomes complicated.

Generally, an electromagnet has much lower magnetic induction than a permanent magnet, and its magnetic force is weak. Accordingly, far greater magnetic force is needed in the above-described case of (c); ON -2, than in the case of (b); ON -1. Large and heavy electromagnetic coils (coils that are wound many times) are required, or a power supply having strong electric energy and a thick power cable are required to obtain the greater magnetic force needed for Shiozaki et al. Both of these options impair responsiveness.

In addition, hardware becomes complicated and large-sized in the apparatus of Shiozaki et al. (e.g. a switch changing the regular voltage and reverse voltage is necessary for an electronic control unit).

Nothing in Martin et al. and Shiozaki et al. suggest the hypothetical combination relied upon in the Office Action. Furthermore, both Martin et al. and Shiozaki et al. utilize only one controlling factor. In this regard, Shiozaki et al. relies entirely upon one controlling factor, such as an engine rotating speed. Martin et al. relies on one controlling factor, such as cooling temperature. In contrast, the method defined by amended claim 1 herein includes a step of “detecting a plurality of signals including: temperature of cooling liquid of a radiator, a fan rotating speed, temperature of transmission oil, vehicle speed, engine rotating speed, pressure of a compressor of an air conditioner and a turning-on or a turning-off signal of the air conditioner for determining a desired rotational speed of the sealing housing.” Additionally, with respect to claim 3, the Shiozaki et al. reference does not suggest how to obtain the operation of advantages of the claimed invention by adapting specific controlling factors. The control logic recited in the method steps of claim 3 reduces the response delay with respect to control instruction of the fan rotation, reduces associated rotation at the engine rotation changing time, the engine starting time etc., stabilizes the fan rotating behavior, reduces power consumption, improves fuel efficiency and reduces fan noise, as explained in the portion of the subject application extending from page 9, line 20 to page 10, line 1. For these reasons, it is submitted that the invention defined by the

amended claims herein is not taught or suggested by the Martin et al. reference considered in view of Shiozaki et al.

Respectfully submitted,

A handwritten signature in dark ink, appearing to read "Gerald E. Hespos". The signature is fluid and cursive, with the first name "Gerald" and last name "Hespos" clearly distinguishable.

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